



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,091	01/28/2000	Patrick Brindel	Q57709	1773

7590 05/21/2003  
SUGHRUE MION ZINN MACPEAK & SEAS PLLC  
2100 Pennsylvania Avenue N.W.  
Suite 800  
Washington, DC 20037-3213

EXAMINER

LI, SHI K

ART UNIT	PAPER NUMBER
----------	--------------

2633

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/493,091

Applicant(s)

BRINDEL ET AL.

Examiner

Shi K. Li

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other: _____.                                   |

## **DETAILED ACTION**

### ***Drawings***

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). As indicated in page 4, line 16 of the specification, "FIG. 1 shows the general structure of a prior art optical transmission system". Also, the amended specification for page 4, last paragraph says, "FIG 1 shows a conventional optical transmission system". Therefore labeling FIG. 1 as "Prior Art" is appropriate. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. FIGs. 4-6 are objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. It is recommended that legend "REGEN" be added to the boxes with label "16" in the same way as FIG. 2 and FIG. 3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites "[t]he system claim in claim 4 5". It is unclear to which claim claim 6 refers.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3, 8 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Uehara (U.S. Patent 6,256,125 B1).

Uehara discloses a WDM transmission system in FIG. 7 comprising end stations 46 and 53 connected by an optical line. Each end station includes light transmitter 47 and light receiver 50. It is understood that the receiver of end station 53 is connected to the transmitter 47 of end station 46. The optical line passes through a number of nodes, each of which includes channel regenerators as illustrated in FIG. 2. Uehara explains in col. 5, line 49-col. 6, line 51 the operation of the system. Channels of different data rates have different regeneration requirement; only channels of certain bit rates are regenerated in a particular node. Since the data rates of a channel are predetermined, the channels that are regenerated in a particular node are also predetermined.

Regarding claim 3, Uehara teaches in FIG.1 an example of 3 channels each of which has a different wavelength than the others. That is, each of them forms a group of one channel.

Regarding claim 8, the regenerator of FIG. 2 includes demultiplexer 1 and multiplexer 3.

Regarding claim 11, FIG. 7 shows  $\lambda_{SV}$  as the supervisory channel.

Art Unit: 2633

Regarding claim 12, FIG. 2 shows AWG 1 for separating the supervisory channel, monitor signal receiver 4 for receiving the signal, controller 7 and monitor signal transmitter 5 for retransmitting the supervisory channel and AWG 3 for remultiplexing the channel.

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of ITU G.692 (ITU-T G.692, "Optical Interfaces for Multichannel Systems with Optical Amplifiers", October 1998, pp. 1, 4-5).

Uehara has been discussed above in regard to claims 1, 3, 8 and 11-12. Regarding claim 2, the difference between Uehara and the claimed invention is that Uehara does not explicitly mention that the number of channel regenerators is a submultiple of the number of channels. However, it is well known in the art that the number of channels depends on the applications and the number of regenerators depends on the distance between the source and the destination. For example, ITU G.692 lists in Table 2 a 16-channel system with 3 spans. The number of regenerator is one less than the number of spans. That is, the number of regenerators is a submultiple of the number of channels. One of ordinary skill in the art would have been motivated to combine the teaching of ITU G.692 with the transmission system of Uehara because following international standards promotes interoperability. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to deploy transmission system with 16 channels and 2 regenerators, as taught by ITU G.692, based on the

Art Unit: 2633

transmission system of Uehara because following international standards promotes interoperability.

Regarding claim 5, ITU G.692 specifies three different data rates, namely STM-4, STM-16 and STM-64. Dividing 16 channels into 3 groups, at least one of the groups has 2 or more channels.

9. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of Cao (U.S. Patent 6,337,755 B1).

Uehara has been discussed above in regard to claims 1, 3, 8 and 11-12. Regarding claim 4, the difference between Uehara and the claimed invention is that Uehara does not specify the regenerator as optical regenerator. Cao teaches in FIG. 1 the art of optical regenerator and gives in col. 1, lines 25-27 some of the advantages of an optical regenerator, namely bit rate independence, high speed and low cost. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use optical regenerator, as taught by Cao, in the transmission system of Uehara because of its bit rate independence, low cost and high speed.

Regarding claim 7, the modulator in FIG. 1 of Cao includes a clock recovery circuit 24 to synchronize with the modulator and the modulator is a synchronous modulator as described in col. 3, lines 35-38.

10. Claim 6, with the assumption that claim 6 depends on claim 5, is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara and ITU G.692 as applied to claims 2 and 5 above, and further in view of Cao (U.S. Patent 6,337,755 B1).

Uehara and ITU G.692 have been discussed above in regard to claims 2 and 5. The difference between the modified transmission system of Uehara and ITU G.692 is that Uehara

Art Unit: 2633

and ITU G.692 do not specify the regenerator as optical regenerator. Cao teaches in FIG. 1 the art of optical regenerator, which includes a clock recovery circuit 24 to synchronize with the modulator and the modulator is a synchronous modulator as described in col. 3, lines 35-38. Cao gives in col. 1, lines 25-27 some of the advantages of an optical regenerator, namely bit rate independence, high speed and low cost. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use optical regenerator, as taught by Cao, in the modified transmission system of Uehara and ITU G.692 because of its bit rate independence, low cost and high speed.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of Bo et al. (W. Bo et al., "Fiber Gratings Based Optical Add/Drop Multiplexer with Low Interferometric Crosstalk", International Conference on Communication Technology, ICCT'98, October 22-24, 1998).

Uehara has been discussed above in regard to claims 1, 3, 8 and 11-12. The difference between Uehara and the claimed invention is that Uehara uses a multiplexer/demultiplexer to separate the channel for regeneration and recombine the channels after regeneration while the claimed invention uses inserter/extractor for isolating channels to be regenerated. Bo et al. teaches an OADM in FIG. 2 which can be used to extract/insert one or more specific channel from a WDM system. This OADM is ideal for extracting a small number of channels and has low insertion loss and good isolation. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inserter/extractor to isolate the channel for regeneration, as taught by Bo et al., in the transmission system of Uehara because an inserter/extractor has low insertion loss and good isolation.

Art Unit: 2633

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of DiGiovanni et al. (U.S. Patent 5,050,949).

Uehara has been discussed above in regard to claims 1, 3, 8 and 11-12. The difference between Uehara and the claimed invention is that Uehara does not include a compensation amplifier. DiGiovanni et al. teaches the importance of equalizing the power level of the channels of a WDM system in col. 1, lines 16-35. DiGiovanni et al. also teaches the use of optical amplifier to equalize the channels. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an optical amplifier to equalize the power of the channels, as taught by DiGiovanni et al., in the transmission system of Uehara because power equalization improves the performance of the transmission system.

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uehara (U.S. Patent 6,256,125 B1) in view of Kinoshita (U.S. Patent 6,023,366).

Uehara has been discussed above in regard to claims 1, 3, 8 and 11-12. The difference between Uehara and the claimed invention is that Uehara does not show the delivery of a portion of the regenerated signal from the regenerator unit to the supervisory unit. Kinoshita teaches in FIG. 2 the delivery of optical output signal to the supervisory unit. One of ordinary skill in the art would have been motivated to combine the teaching of Kinoshita with the transmission system of Uehara because it is important to monitor the signal quality and convey such information to other network elements and operation system for network management. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to deliver a portion of the regenerated signal from the regenerator unit to the supervisory unit for measuring the signal quality and convey such information to other network elements and



operation system, as taught by Kinoshita, in the transmission system of Uehara because it facilitates network management.

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (admission) in view of Uehara (U.S. Patent 6,256,125 B1).

Admission discloses in FIG. 1 an arrangement of optical amplifiers and regenerators such that the distance between two regenerators is a multiple of the distance between two amplifiers (see p. 5, lines 4-8). The difference between the admission and the claimed invention is that in the prior art, all channels are regenerated while the claimed invention only regenerated a predetermined respective group of channels. Uehara teaches in col. 5, line 49-col. 6, line 51 that channels of different data rates have different regeneration requirement and only channels of certain data rates are regenerated in a particular node in the transmission system of FIG. 7. Since the data rates of a channel are predetermined, the channels that are regenerated in a particular node are also predetermined. One of ordinary skill in the art would have been motivated to combine the teaching of Uehara in the transmission system of FIG. 1 of the instant application because only regenerating channels that are necessary to be regenerated reduces the complexity of the regenerator and reduces cost. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to regenerate only a predetermined respective group of channels, as taught by Uehara, in the transmission system of FIG. 1 of the instant application because doing so reduces the complexity of the regenerator and reduces cost.

#### ***Response to Arguments***

15. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

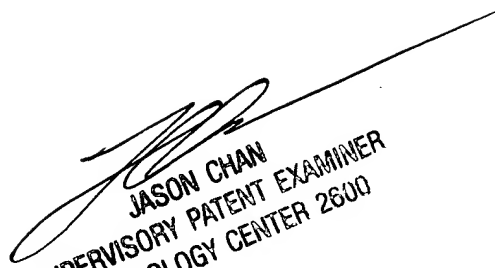
Application/Control Number: 09/493,091

Page 10

Art Unit: 2633

skl

May 14, 2003



JASON CHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600